REMARKS

This paper is responsive to the Office Action mailed January 5, 2009. Claims 1-15 are pending and stand rejected. Claims 1-3 and 5-15 have been amended. Support for all amended claims can be found in the specification, and no new matter has been added by these amendments. Reconsideration of the claims in view of the amendments and the following remarks is respectfully requested.

Allowable Subject Matter

The Office Action states that claims 10 and 11 would be allowed if the rejection under 35 U.S.C. §101 is overcome.

Claim Rejections Under 35 U.S.C. § 101

The Office Action states that claims 1-11 are rejected under 35 U.S.C. §101 as not falling within one of the four statutory categories of invention. Specifically, the Office Action states:

> While the instant claims recite a series of steps or acts to be performed, the claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. Claims 1-11 are method claims which do not have any processor or computing device tied to them.

Without conceding the merits of the rejection, Applicants respectfully submit that the amended claims overcome the rejections.

Claim 1 is a method claim and has been amended to include operations performed by a processor and other computing devices. Specifically, amended claim 1 recites in part "obtaining defect position information by inspecting a substrate with an inspection apparatus...; storing the obtained defect position information in memory; processing the defect position information stored in the memory using a processor;... classifying the obtained distribution of defects into one of a plurality of distribution shape characteristic categories by using a defect distribution shape classifier and the processed defect position information...; and displaying, on a display screen, the classified distribution of defects."

As can be seen from amended claim 1, a processor and other computing elements are included in the claim to indicate that the method is performed by a computer. For example, an inspection apparatus is used to inspect a substrate to obtain defect position information; the defect position information is stored in memory; a processor is used to process the defect position information; a defect distribution shape classifier classifies a distribution of defects into categories; and the classified distribution of defects is displayed on a display screen. Thus, the rejection of claim 1 under 35 U.S.C. §101 is overcome because the method is appropriately tied to a processor and other computing devices.

Claim 7 has been amended similar to claim 1 to recite processor and computing device features. Thus, the rejection of claim 7 under 35 U.S.C. §101 is also overcome for at least the same reasons.

Claims 2-6 depend from claim 1, and claims 8 and 9 depend from claim 7. As discussed above, claims 1 and 7 have been amended to include statutory subject matter. Thus, claims 2-6, 8 and 9 also overcome the 35 U.S.C. §101 rejection for at least the same reasons as claims 1 and 7.

Claim 10 is a method claim and has been amended to include operations performed by a processor and other computing devices. Specifically, amended claim 10 recites in part "creating a wafer map showing positions of defects on a coordinate system... inspecting a processed substrate with an inspection apparatus...; storing the wafer map in memory; and processing the wafer map stored in the memory using a processor..." Thus, the rejection of claim 10 under 35 U.S.C. §101 is overcome because the method is appropriately tied to a processor and other computing devices.

Claim 11 has been amended similar to claim 10 to recite processor and computing device features. Thus, the rejection of claim 11 under 35 U.S.C. §101 is also overcome for at least the same reasons.

Accordingly, withdrawal of the rejection of claims 1-11 under 35 U.S.C. §101 is respectfully requested.

Claim Rejections Under 35 U.S.C. § 103

Claims 1, 4, 7, 8 and 12-15 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,982,920 issued to *Tobin* in view of U.S. Patent No. 7,068,834 issued to *Ikeda*. Claims 2 and 9 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Tobin* and *Ikeda* in view of U.S. Patent No. 7,016,526 issued to *Smilansky*. Claim 5 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Tobin* and *Ikeda* in view of U.S. Patent No, 6,130,959 issued to *Li*. Claims 3 and 6 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Tobin* and *Ikeda* in view of U.S. Patent No, 6,408,105 issued to *Maruo*. Without conceding the merits of the rejection, Applicants respectfully submit that the amended claims overcome the rejections.

The present invention relates generally to wafer inspection, and in particular to classifying defects. Specifically, amended claim 1 recites:

> A defect data analysis method comprising the steps of:
> obtaining defect position information by inspecting a substrate with an inspection apparatus, wherein the substrate is processed in a process of circuit pattern formation on the substrate;
> storing the obtained defect position information in memory;
> processing the defect position information stored in the memory using a processor;
> obtaining distribution of defects on the processed substrate from the processed defect position information;
> classifying the obtained distribution of defects into one of a plurality of distribution shape characteristic categories by using a defect distribution shape classifier and the processed defect position information, wherein the plurality of distribution shape characteristic categories comprises: repeated defects, clustered defects, arc-shaped regional defects, radial regional defects, line type regional defects, ring and blob type regional defects and random defects; and
> displaying, on a display screen, the classified distribution of defects, wherein the distribution shape characteristic categories are each displayed using different colors.

As described in claim 1, a defect distribution shape classifier is used to classify defects into one of the following specific distribution shape characteristic categories: repeated defects, clustered defects, arc-shaped defects, radial regional defects, line type regional defects, and ring and blob type defects. The defect distribution shape classifier classifies as random any other defects which are not classified under the foregoing categories. As discussed below, *Tobin*

and *Ikeda* are different from claim 1 because the defects are not automatically classified into a distribution shape characteristic category by, for example, a defect distribution shape classifier.

Tobin discloses performing automated defect spatial signature analysis on a data set representing defect coordinates and wafer processing information. Data from the data set is categorized based on different events. (See Abstract). The event categories include global events, curvilinear events, amorphous events, or micro-structure events. (See col. 4, lines 1-15).

Ikeda discloses the classification of various types of individual defect shapes. (See Abstract and Fig. 1). In *Ikeda*, the classification is performed by a user, and more particularly by the judgment of a user. (See col. 3, line 60 to col. 4, line 6). *Ikeda* expressly teaches that the user classifies a defect "while looking at all the defects images on the display screen," and expressly teaches that the user "need only move the individual defect images to an optimal classification area having a typical image indicative of similar visual features in order to carry out the classification operation."

Neither *Tobin*, *Ikeda* nor any of the other cited references, alone or in combination, teach all of the features recited in independent claim 1. Specifically, *Tobin* and *Ikeda* do not disclose "classifying the obtained distribution of defects into one of a plurality of distribution shape characteristic categories by using a defect distribution shape classifier and the processed defect position information, wherein the plurality of distribution shape characteristic categories comprises: repeated defects, clustered defects, arc-shaped regional defects, radial regional defects, line type regional defects, ring and blob type regional defects and random defects." For at least this reason, claim 1 is allowable over the cited art.

Independent claims 7, 12 and 14 recite features that are similar to the features recited in claim 1. As discussed above, the cited art does not disclose these features. Thus, claims 7, 12 and 14 are also allowable over the cited art for at least the same reasons, as well as on their own merits.

Claims 2-6 depend from claim 1, claims 8 and 9 depend from claim 7, claim 13 depends from claim 12, and claim 15 depends from claim 14. As discussed above, claims 1, 7, 12 and 14 are allowable. Thus, claims 2-6, 8, 9, 13 and 15 are also patentable for at least the same reasons, as well as on their own merits.

Accordingly, withdrawal of the rejection of claims 1-15 under 35 U.S.C. §103(a) is respectfully requested.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 206-467-9600.

Respectfully submitted,

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